Space Weather Forecast

Issued on Thursday 27 February 2025 at 12:41 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Isolated Moderate-class flares likely. Chance of further G1 Minor Storms, most likely days 1 and 2 (27-28 Feb).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low with occasional Common-class flares. There are currently ten sunspot regions on the Earth-facing disc. Most regions have generally been showing a simplifying and weakening trend, or have been stable. The most likely flare source is from a region in the southwest, which is the largest region on the disc, however this region is expected to rotate over the southwest limb day 2 (28 Feb), reducing the flare probabilities. The next most complex is in the northeast, with some mixing of polarities through its intermediate spots, however this has remained stable and relatively inactive. The other regions are much smaller and simpler.

There have been three coronal mass ejections (CMEs) of note. First, a filament eruption, just west of centre disc, was observed around 26/0600 UTC, this is most likely expected to pass ahead of Earths orbit, with a slight chance of a glancing blow. This was followed by a filament eruption in the southwest around 26/1445 UTC and again is considered most likely to pass ahead of Earth but a glance can not be completely ruled out. Finally, a filament in the southeast saw some ribbon flaring on the edge of a coronal hole, this is believed to pass behind Earths orbit.

Solar Wind / Geomagnetic Activity: The solar wind strengthened following connection with a coronal hole fast wind and is now elevated. Interplanetary Magnetic Field was initially Strong before quickly lowering to Moderate where it remained. The north-south component fluctuated but was predominantly Weak to Moderately southward. Geomagnetic activity was Quiet to Unsettled (Kp 2-3) with an Active (Kp4) interval between 27/0001-0300UTC and a G2/Kp6 Moderate geomagnetic storm between 27/0900-1200UTC.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was above background levels, but below the S1/Minor Radiation Storm and declining.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity is forecast with isolated Moderate-class flares likely at first, reducing to a chance of isolated Moderate-class flares by day 3 (01 Mar).

Solar Wind / Geomagnetic Activity: Glancing CME influences are currently not expected, but can't be completely ruled out days 1-2 (27-28 Feb) from the Moderate flare/filament eruption on

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24 Feb as well as a further potential glancing blow from the filament eruption on 26/1445 UTC. Further enhancement from a fast wind connection to a coronal hole is likely on days 1-2 (27-28 Feb), with Strong wind speeds of over 600km/s expected. Wind speeds are likely to remain elevated or strong for the rest of the period. Unsettled to Active geomagnetic activity is expected with a chance of further G1 Minor geomagnetic storms on Days 1-2 (27-28 Feb). From Day 3 (1st March) geomagnetic activity is expected to return to predominantly Quiet though with winds remaining elevated there remains a likelihood of further Unsettled to Active intervals and a small chance of Minor geomagnetic storms.

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) is expected to continue declining towards background. There remains a slight chance of further enhancements.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	Yes	40	25	15	10
Strong	G3	No	5	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	No	55	55	50	50
Very Active	R3-R5 (X Class)	No	5	5	1	1

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Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	10	10	10	10
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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